AMENDMENTS TO SPECIFICATION

Please amend the paragraph beginning on page 17 line 7 and ending on page 18 line 8 as follows:

FIG. 3 depicts one embodiment of the completion scheme and production method of this invention in order to produce heat energy for use in direct and indirect use applications producing bitumen and the generation of electricity. Wells 320, 325 and 330 are drilled from the earth's surface 1 through any sedimentary formations 2 overlying the Pre-Cambrian formation 10, into the Pre-Cambrian formation 10 to a depth of sufficient temperature to allow the development of one or more discrete formation fracture joint clouds <u>300, 305, 310</u> which are oriented vertically or horizontally, as determined by the rock formation predominant stress fields, in respect to one another. The deepest well 320, in the case of vertical orientation of the formation fracture clouds, may need to be drilled to a depth greater than 30,000 feet (depending on the thermal gradient of the formation and the required temperature for the end user of the geothermal heat) in order to reach sufficiently high bottom-hole rock temperatures to allow the development of one or more reservoirs above the bottom-hole reservoir. If the facture cloud develops vertically due to the least principle stress being positioned in the vertical position, then each fracture cloud reservoir will need to be separated in the order of 5,000 feet. The second deepest well 325, in this case, would need to be drilled and cased to a depth of 25,000 feet and the third well 330 would need to be drilled and cased to a depth of 20,000 feet. The lowermost portion of each well could be hydraulically fractured to produce a reservoir volume of dilated joints in the formation by pumping at pressures in excess of the joint dilation pressure and the formation break down pressure, which is estimated in the order of 1.0 psi/foot depth. The well bore would then be useable for the pressurization cycle to charge the reservoir followed by the depressurization of the reservoir to flush the heated water from the dilated joints and produce the heat

absorbed by the water during the pressurization and depressurization cycle. The same well bore completion process, would be repeated in each of the other two shallower wells in order to develop an aggregate of three discrete reservoirs that would accept pressured water to charge the reservoir through dilating the joints allowing the water to travel into the reservoir, be heated and then expelled from the reservoir when the water pressure is lowered in the well bore. Absorbed heat could be continuously produced by timing the pressure cycling of the well bore to provide one well being injected into at twice the rate that the well is reverse flowed. By offsetting the timing of the flow back section of these wells, it is possible to provide continuous, high flow rate production from this arrangement of reservoirs. A similar process would be necessary to develop reservoirs that are horizontally spaced with the reservoirs in either the vertical or the horizontal orientation.

Please amend the paragraph beginning on page 18 line 9 and ending on page 18 line 29 as follows:

FIG. 3 shows the necessary configuration to produce continuous high flow heated water flow from three discrete reservoirs separated vertically from each other. Pre-charge pump 355 supplies cooled water from surface reservoir pit 350 to injection pump 385. Injection pump 385 forces cooled water under high pressure and volume into one of the three Hot Fractured Rock (HFR) reservoirs. Injection pump 385 is sized to be able to fully charge a single reservoir at a rate that is equal to the discharge rate of flushing the heated water from the other two HFR reservoirs. In this manner a three well production scheme could provide two wells producing at half the injection rate thereby providing continuous flow by matching the injection and production rate between the three well bores. The wells are managed by alternately opening and closing discharge control vales 410, 405, 400 and injection control valves 390, 415, 420 to provide the proper sequence each 24 hours. The high volume heated water is brought to the surface by the pressure energy stored in the rock during the charging cycle. The heated

water is then conducted through a heat exchanger 45 where the heat is transferred from the well discharge flow by means of flowing a second fluid through the heat exchanger lines 40 to 50. The cooled well bore fluid is routed back down the well bore through control valve 370 to injection pump 385. Alternately, the cooled well bore fluid can be discharged from the heat exchanger to the surface reservoir pit 350 by means of line 380 and line 365 on opposite sides of choke valve 375 which controls the system back-pressure. The surface reservoir pit 350 would be used to store any reserve water necessary to provide make-up water as the reservoirs mature.

Please amend the paragraph beginning on page 25 line 32 and ending on page 26 line 18 as follows:

Referring now to FIG. 7, there is shown a diagrammatic schematic illustration of the drilling of a well bore within a plurality of earthen formations. At the wellhead 400 represented by the diagrammatic illustration of a derrick, a first earthen formation 404 is penetrated by well bore 402. The type of drill bit utilized in this particular formation may be a mechanical drill bit conventional for shallow wells and/or the PJARMD referenced herein. Diagrammatically represented in lower earthen formation 406 is a drill bit 414 which may be the same as and/or similar to the drill bit 412 but may vary in accordance with the principles of the present invention depending on the type of earthen structure found in earthen section 406. Likewise, earthen section 408 is a continuation of the well bore 402 and illustrates diagrammatically, a drill bit 416 which may be of a different methodology in accordance with the principles of the present invention, depending on the type of structure engaged in earthen formation 408. Finally, earthen formation 410 is diagrammatically represented as a Precambrian and/or Hadean crystalline rock wherein the cross-sectional profile thereof is varied and the bore hole section 430 is shown penetrated by a hydraulic drilling methodology found in the drilling tool 418 which may incorporate particle jet drilling in accordance with the principles of the present invention for penetrating

the Precambrian or Hadean crystalline rock formation for accessing the thermal energy therein and establishing a site within the bore hole for subsequent hydraulic fracturing and the charging and discharging described above in accordance with the principles of the present invention.